Revision of the CPI hospital services component

Upcoming modifications are designed to capture current service delivery patterns, reimbursement methods, and payment sources for hospital visits, rather than what the hospital charges for individual treatment inputs; the result will be an index that better reflects price changes in the dynamic health care field

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Effective January 1997, the Bureau of Labor Statistics will begin publication of a revised 'hospital and related services' index, a component of the 'medical care' major group of the Consumer Price Index (CPI). The revised index incorporates several important improvements in the structural definition and methodology used to measure hospital price change. These developments are the product of several years of data gathering from the hospital industry and from BLS field staff currently pricing hospital services. (See exhibit 1.) Experience gained through implementation of intermediate enhancements since 1990 also contributed significantly to the final direction of these changes.

This article first outlines the changes that will be made to the 'hospital services' index, and the likely benefits of these changes. Next, it discusses the immediate impact of the changes on CPI data users and on field collection activities. And finally, it explains where the changes position the CPI relative to future industry developments and alternative methods for measuring hospital price movement. (Changes in the measurement of nursing home price movement are not covered here.)

Background

The CPI item structure, which is used in the sample allocation and index estimation processes,[1] currently partitions the consumer marketplace into seven major groups of expenditures. (After the 1998 revision of the overall CPI, the item structure will have eight major groups.) 'Medical care' is a major group in both the current and the 1998 item structures, and as of December 1995, it represented 7.362 percent of total consumer expenditures.[2] By definition, the medical care expenditures eligible for the CPI represent out-of-pocket expenses paid by the consumer. Fees (not recouped through health insurance) paid directly to retail outlets for medical goods and to doctors and other medical professionals, as well as insurance premiums paid by consumers for health care coverage, are considered to be direct consumer out-of-pocket medical expenses.

The 'medical care' major group is divided into subcategories consisting of two intermediate groups ('medical care commodities' and 'medical care services'), four expenditure classes (of which 'hospital services' is one), and nine published strata. Strata are the building blocks of the CPI item structure.[3] It is at the stratum level of the CPI item structure hierarchy that the most basic aggregate prices are calculated, and that quality and quantity are held constant. Due to the importance of the item stratum in the calculation of the CPI, improvements to stratum sampling and definitions, and to the ability of item strata to reflect what is available in the marketplace, will im-

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prove the quality of CPI estimates of price change.

Hospital services is a uniquely difficult area in which to measure price change. Defining the hospital service in itself presents special issues within the parameters of a modified Laspeyres index[4] such as the CPI. Attempting to identify and fix the limits of items in an industry in which technological advances continuously redefine an already difficult-to-describe output has made it necessary to take a new look at the traditional inputs formula for describing hospital services.[5] It is possible to view the hospital industry's output from multiple perspectives related to its various producers and consumers. For the 1997 revision of the CPI hospital sample, a payor-centered, treatment-related view has been taken as a first step toward a future measurement of hospital visit outcomes that will be fully patient-centered.

Developments since the 1987 revision

As part of the 1987 CPI revision, BLS implemented improvements in the 'medical care' CPI, including an expansion of the definition of services eligible for inclusion in the hospital index and an improved procedure for estimating price change of health insurance, which is not directly priced for the CPI. Since the 1987 revision, a series of steps (exhibit 1) have been taken to gather clarifying information on the ways in which hospitals and insurers describe medical care services, on the different reimbursement methods in use, and particularly on the ongoing availability of hospital reimbursement data to regularly visiting CPI field staff. The January 1997 improvements to the hospital index are the result of these field studies. They include a restructuring of the item strata, a new definition of the service to be priced, a revised data collection instrument, and new hospital data collection procedures.

The 1997 changes to the index

The most visible change to the current hospital index is in the way in which it is defined within the CPI item structure. The expenditure class, 'hospital and related services,' is an umbrella category for various subsets or strata of hospital services. For the 1997 hospital index revision, three previously published hospital strata—two 'inpatient services' strata ('hospital room,' and 'other inpatient services') which included 'nursing homes,' and one 'outpatient services' stratum—have been combined into two published strata. The new strata are 'hospital services' and 'nursing home services.'[6] (See exhibit 2.)

In addition to the structural change, the new 'hospital services' index uses a different and broader definition of the service to be priced. The new item definition identifies a hospital visit with multiple inputs as a single item; the current definition treats each input to a visit as a separate item. These changes move the hospital index toward a more global classification of hospital services, with several advantages:

- The restructuring away from three hospital strata with fixed relative weights to one inclusive hospital services stratum will allow the CPI to account for shifts over time in the mix of inpatient and outpatient services. This also makes it possible for the CPI to follow the price movement of a medical procedure as it moves from an inpatient service delivery setting to an outpatient setting when necessary. The current structure prohibits this type of price comparison because sample items are selected within a specific stratum and are not allowed to change stratum, nor can price comparisons be made between strata.
- The new structure will direct the CPI away from narrowly defined categories of hospital service inputs priced independently of one another, as is the case under the current methodology. Because the details of hospital treatment inputs, including specific supplies, diagnostic tools, and procedures, are continuously evolving, the broader view of hospital services de-emphasizes individual price movements within specific hospital departments and underscores the impact of important price-determining factors at the hospital level.[7]
- The combination of all price observations into one stratum will greatly diminish the distortions in price change measurement that can occur when an item-area index change is based on just one or two heavily weighted prices. There should be sufficient sample allocated to the stratum to ensure that all item-area hospital index estimates are more reliable.
- The simultaneous move to pricing bundles of services in the aggregate will help to reduce the variance that results from averaging price changes for highly volatile individual inputs.
- The new structure should significantly reduce the need in the hospital services component for the collapsing process, whereby price change in index-area sample cells with no price observations for the month is imputed from the change noted for a different but related stratum in the same index area.

Item redefinition. The scope of items selected for pricing in hospitals will be substantially broadened under the revised index procedures. For hospitals, the unique item[8] has been redefined as the hospital visit, a broader entity, based on the contents of a "live" hospital bill. The hospital visit is a bundle of complementary hospital services that together are designed to achieve the desired outcome. The patient experiences the hospital by means of this entity, the visit. A visit may consist of one outpatient service (or purchase), or may comprise a week's stay and a multitude of personal inpatient services. These individual services, such as a night in a hospital room, lab tests, anesthesia for surgery, or emergency treatment, are the components of the visit as *gestalt*. Visits, as opposed to individual services, now increasingly form the basis for pay-

ment determination, and also can provide the framework for a CPI hospital services item description.

The new item definition and the difficulties associated with obtaining a transaction price called for the development of a new data collection instrument for hospital services. The primary focus of the improved data collection instrument (or checklist) introduced in May 1996 is the concept of the hospital visit as a surrogate for the treatment received during a defined stay in the hospital. The new hospital checklist permitted field staff who collect prices in the sample of hospitals throughout the United States to select item samples that better reflect current service delivery patterns, reimbursement methods, and payment sources.

Integral to this redefinition is an intensification of BLS' long-standing efforts to obtain hospital transaction (reimbursement) prices rather than hospital list (chargemaster) prices.[9] This involves knowing the terms under which the insurer and the patient (the payors) will reimburse the hospital. The new checklist emphasizes identification of the payor based on hospital revenues from different payors, and the selection of a recent hospital bill reimbursed by the selected payor. One goal for selecting and naming a payor is to obtain a reimbursement rate or transaction price as often as possible in the CPI hospital sample.

From May through August of 1996, field staff reselected items newly defined as hospital visits in the majority of hospitals that currently contribute price data to the CPI. Reselection has allowed BLS to replace many of the items now viewed as hospital care inputs with more comprehensive sets of services formed from key elements of selected patient bills. Key elements are factors that directly influence reimbursement for the hospital visit, such as important characteristics of the patient and an overview of the range and complexity of services provided during the visit.

New data collection instrument and procedures. Changes in the hospital price data collection process are closely related to the structural modifications and item redefinitions described above. The chief features of the new checklist, which is used for both item initiation and description building, are:

- combination of both inpatient and outpatient services into one collection document mirroring the new item structure;
- focus on patient characteristics;
- placement of the payor high in the specification hierarchy of price-determining characteristics;
- request for basic contract terms of sampled payors;
- identification of types of transaction and other prices;
- several options for payor reimbursement method; and
- a broad listing of procedures and services based on the contents of the bill, included as an indication of the complexity of the visit.

The item description, a set of pricing cues for CPI field staff and respondents, contains the essential features of the item that was selected initially through probability sampling and constructed on the checklist. As a template for the actual hospital visit, the description encompasses the set of characteristics that define how the hospital visit is fixed as the unique item. In the CPI, a unique item is a good or service with a unique price that represents a broader item category. For hospital services, this set consists of attributes of a real patient, including the insurance characteristic (and thus, the reimbursement method), combined with specific features of the patient stay at the hospital, all taken from a live bill.

The insurance characteristic has the greatest potential to influence the item transaction price or amount of reimbursement. Is the patient insured? Who will pay and under what arrangement? The new procedures and collection forms for the hospital price index particularly address insurance related variables. Additional examples of patient variables that govern the contents of the hospital visit, as found on a bill, are: Admitting diagnosis, severity of presenting condition, complications, concomitant health, and age.[10]

Beyond the insurance type, name of the insurer, and terms of the insurance contract, data on the patient required for the item description include patient classification (medical, surgical, psychiatric, burn, neonatal, maternity, AIDS, and so forth); a recorded diagnosis based on a national, international, or internal diagnosis coding system; and information on whether the patient paid out-of-pocket for a private room, telephone, toiletry kit, or any portion of the final bill. Most of these data will remain constant over time in the unique item description.

Other potential price factors included on the checklist are: Local government regulation of hospital prices, actual length of patient stay, other one-time charges, and the expiration date of the current contract with the insurer. To communicate the range of services provided to the individual patient as recorded on the bill, an extensive list of categories and subcategories of services has been provided for simple documentation. Referring to the bill, field staff will note applicable items on the list—no individual chargemaster prices for these specifics are to be recorded in direct conjunction with this list. If the chargemaster is the basis of reimbursement, individual prices will be recorded elsewhere on the collection form. This list will be completed even when referencing a reimbursement method that disregards the detail of the visit, such as per diem or case rate.

Instructions accompanying the new data collection instrument are an expansion of the 1994 sample rotation procedures mentioned in exhibit 1. Through revenue-based disaggregation,[11] field staff will first determine the number of inpatient versus outpatient descriptions to be completed in the specific hospital, and then will request data on revenues gen-

Exhibit 1. Chronology of research on the 'hospital services' index following the 1987 CPI revision

When	Activity	Participants
1989–1990	In 1988 and 1989, CPOPS[1] hospitals were asked about nonmedicare use of diagnosis related groups (DRGs) and availability of related data.	Two-fifths of hospital sample (1988 and 1989 CPOPS Primary Sampling Units (PSUs)) were approached; 33 hospitals participated
Results	In responding hospitals, 50 percent of eligible nonmedicare, third-party payors used DRGs; 50 percent of respondents would provide DRG information to field staff.	
1990	The data collection instrument was revised to include DRGs.	Fifty CPI sample hospitals in New York, New Jersey, and Connecticut
Results	Inpatient items in the three States were reselected using State-defined DRGs as the universe, comprising approximately 10 percent of the total hospital sample.	
1991	Inquiries were made into use of ICD–9[2] codes as a description basis.	One-fifth of sample was approached (1990 CPOPS cities); 31 hospitals in 10 PSUs participated
Results	Thirty hospitals used ICD–9 codes for inpatient diagnosis; 24 also used these codes for outpatient diagnosis. Fourteen of the thirty-one indicated they had partial ability to calculate charges based on ICD–9 codes; 17 said they could not do so.	
1991	In August, inquiries were made into the type and availability of reimbursement data for eligible payors.	Hospital sample in all on-cycle PSUs (approximately three-fifths of the hospital outlet sample)
Results	The following information on reimbursement data and its availability was obtained: Percent of responding hospitals: Reimbursed by published charges, with contract discount: Blue Cross/Blue Shield ..... 53 Commercial ..... 61 Reimbursed by per diem or DRG: Blue Cross/Blue Shield ..... 37 Commercial ..... 8 Paid full chargemaster: Blue Cross/Blue Shield ..... 5 Commercial ..... 23 Other payment method, or the payment method varied: Blue Cross/Blue Shield ..... 5 Commercial ..... 8 Data would be available to CPI field staff on regular basis: Blue Cross/Blue Shield ..... 50 Commercial ..... 18 Fifty percent of responding hospitals said Blue Cross/Blue Shield data were available; only 18 percent said that data for other carriers would be available.	
1992	Visits were made to Producer Price Index (PPI) sample hospitals.[3]	Five recently initiated hospitals in Texas plus one nonsample hospital in Tennessee
Results	Hospital analysts gathered further information on difficulties in tracking treatments over time, reimbursement methods in use, and proportions of medicare, medicaid, and other patients.	

Exhibit 1. Continued—Chronology of research on the 'hospital services' index following the 1987 CPI revision

When	Activity	Participants
1993	Analysts visited sample hospitals and field staff in the Northeast.	Fourteen hospitals and twelve field staff in New York, New Jersey, Connecticut, Pennsylvania, Virginia, and Maryland
Results	Analysts gathered information on treatment paths, patient distribution, and State DRG rates. Respondents and field staff advocated annual, semi-annual, or quarterly pricing over current monthly schedule; stressed proprietary nature of reimbursement information. Field staff discussed ways to improve pricing process.	
1993–1995	BLS fielded special hospital instructions in CPOPS cities to select payors when initiating hospital services, and to incorporate DRGs and per diems when appropriate to selected payor.	The 1992, 1993, 1994 CPOPS cities, three-fifths of sample hospitals attempted over a 3-year period
Results	The representation of nonchargemaster prices in the 'hospital services' index was increased from 6 percent to approximately 20 percent. There is more evidence of success in later CPOPS years, after field staff acclimation to new requirements. Field staff learned to identify best respondents for new data, the types of hospital data reports that typically were available for disaggregation, and new pricing needs.	
1994	Extensive input was obtained from field staff through a series of 12 workshops and a national survey on improving CPI medical care data collection.	About 150 field staff in workshops; 100 field staff responded to written survey
Results	Field staff shared views on new procedures, as well as likely respondent reaction. Their main concerns were respondent burden and confidentiality.	
1995	BLS tested two new versions of initiation procedures for hospitals using a draft of revised data collection instrument. The new format collapsed hospital services from three strata into one stratum, and emphasized payor and patient characteristics.	Three staff members tested both versions in 10 hospitals in Colorado, Wisconsin, Illinois, New Jersey, New York, Connecticut, and Massachusetts
Results	Optimal version of instructions was identified, along with several important revisions to draft instrument and procedures. Checklist and instructions were put into final form.	
1996	New forms and procedures were fielded nationwide in May 1996, following a 2-day training session. For all hospitals in sample, field staff either selected new items or transcribed currently collected data already using transaction prices onto new forms.	National hospital sample in all CPI primary sampling areas. Sixty branch and field managers participated in training course
Results	From May through August 1996, field staff reselected items using new forms and procedures in the majority of sample hospitals.	
1997	***New CPI for 'hospitals' is to be published, starting with data for January 1997.***	

[1] Continuing Point of Purchase Survey conducted by the U.S. Bureau of the Census for BLS. In this program, families in a designated urban area are surveyed about the locations in which they purchased various categories of items and the amount of money they spent at those retail establishments.

[2] *International Classification of Diseases*, 9th rev. (World Health Organization, 1988).

[3] The PPI program fielded its hospital sample in 1992 and published its new hospital index for January 1993.

erated from the hospital's various payors. After ineligible payors such as medicare, medicaid, auto policy personal injury protection plans, workers' compensation, and State payors for local jail inmates have been eliminated from the universe, revenue-based disaggregation continues in order to pick the series of payors whose reimbursements the CPI will track in the hospital.

Ideally, field staff will record the key information from the most recently closed-out bill for each of the selected payors. The key information sought concerns the patient characteristics, the diagnosis, the treatment given during the hospital visit, and the amount of reimbursement received or expected to be received from the payors, including the insured patient.[12] In the subsequent monthly pricing process, while the payor identification and key elements will remain constant, it is possible for other elements to change, including reimbursement method, service delivery setting, and the range of services needed to treat the original diagnosis.[13]

For diagnosis related groups (DRGs), per diems, packages, and other case rates,[14] an accurate reimbursement amount for a unique item thus described can be readily obtained during pricing. Fee-for-service contracts, which still constitute a substantial proportion of insurance plans, require special handling. Because the CPI data collection and processing systems are not equipped to handle all the details of a lengthy hospital bill, field staff describing an inpatient or outpatient fee-for-service quote (including a self-payor) will use the live bill to record a bundle of core services provided during the patient's visit. They will report chargemaster prices for each item of the core description available from the bill, and use that bundle as a blueprint for the entire visit when they return to update. The reported price becomes the sum of the listed components *minus any formally negotiated discounts to the insurers* off the chargemaster fee. The bundle will remain fixed throughout the pricing of a fee-for-service quote.

Advantages. The new procedures for item selection have several advantages. First, they allow for a changing distribution between inpatient and outpatient quotes that is specific to the hospital and not based on national level data. As more treatments move to the outpatient setting, more hospitals are generating greater revenue from outpatient services. Outpatient services, therefore, will have a greater chance than previously of being selected during disaggregation and priced on an ongoing basis. Until now, the relative importances of the inpatient and outpatient strata, and the resulting number of inpatient and outpatient quotes in the CPI sample, have been dictated by national cost weights for hospital room, other ancillary services, and outpatient service expenditures from the Consumer Expenditure Survey, combined with the constraints of the CPI sample optimization model. Historical BLS data indicate that prices for inpatient and outpatient services move differently, particularly in the short run, so their relative weights can have an important effect on movements of the national hospital index.

The payor factor has been made prominent in the hierarchy of item characteristics to underscore the fact that payor identification, along with inpatient or outpatient hospital setting, is a vital price factor and should remain constant throughout pricing.[15] In light of increasingly prevalent aggregate payment practices used by insurers, such as per diem, capitation,[16] and various case rates that establish reimbursement limits for visits viewed in the aggregate, the importance of the specifics of services provided during a hospital visit has tended to recede before the identification of the payor and the terms under which the visit will be reimbursed.

On the new hospital checklist, the basic contract terms will be catalogued via checklist specifications that indicate:

1) how the payment is to be split between insurer and patient, if at all;
2) the precise type of transaction price being collected (or not); and
3) the method of reimbursement in use, such as DRG or fee-for-service.

The new description format, while allowing BLS to keep key diagnosis, treatment, patient, and payor characteristics constant, also permits field staff to tune into possible changes in hospital setting, advancing technology, and payor contracts.

Exhibit 2. CPI publication structure for 'hospital services'

Current CPI structure	Structure effective January 1997	Index base year
Hospital and related services	Hospital and related services	1982–84 = 100
Hospital room	Hospital services	Dec. 1996 = 100
Other inpatient services[1]	*Inpatient hospital services*	Dec. 1996 = 100
Hospital outpatient services	*Outpatient hospital services*	Dec. 1986 = 100
	Nursing home services	Dec. 1996 = 100

[1]Currently, 'nursing and convalescent home care' is part of the 'other inpatient services' stratum.

BLS analysts have reasoned that, as a consequence of current trends in reimbursement for medical care, a broad-brush approach to describing hospital services may be in order more often than a minute-detail approach. Nevertheless, for purposes of assessing potential changes in quality of the service offered, the new aggregate method still must document and regularly review key visit descriptors to detect any changes in quality of the hospital visit. Some of the characteristics targeted for this purpose will relate to the hospital itself, such as average length of stay and nurse-to-patient ratio. Other descriptors may correspond to the type of surgery conducted for a particular diagnosis or to changes in treatment setting for the typical delivery of the service. A change in one of these characteristics will alert the analyst to a possible change in the quality of the item described that might have contributed to a price change.

Impact on the CPI process

These procedural modifications have effects on many levels. With respect to the data collection process, field staff and respondents already have experienced a great deal of the change. While on the one hand, respondents are supplying a different type of data than before, they also are able to exercise greater autonomy in how they provide these data. Field staff have learned to perceive hospital services price collection in a fresh way, including a new vocabulary and different modes of actual data collection. Data collection now will rely more heavily on creative combinations of fax, telephone, voice mail, and multiple contacts than on personal visit collection. This approach should improve the response rate for the index, because it provides greater flexibility in the mode and timing of respondent reports.

The CPI hospital index will consist of a greater proportion of price changes for a global service experienced by the patient during a hospital stay. Increased numbers of transaction prices based on estimated reimbursements for these visits will result from these changes, along with the ability to distinguish between chargemaster rates that represent transaction prices and those that do not.

The medical industry will continue to produce advances in medical device and pharmaceutical technology. As a result of the hospital index modifications to data collection procedures, the CPI should be able to identify when these technological enhancements become prevalent in individual hospitals. The updated pricing process provides for a regular review of a list of basic services recorded from the original bill—a simple recounting of the types of services consumed by the patient during the original visit. Through review of this broadly stated list of services, adjustments in hospital policy, facility, or equipment available and in dominant use for treatment of the designated diagnosis will become evident. As a result, BLS will be able to choose whether to substitute the updated procedure for the old one, and whether to consider the "new" procedure as comparable to the old.

This new review method supports the CPI item eligibility rules that the outlet must have sold the item in the last year and that it must expect that it will continue to sell the item.[17] The substitution and quality adjustment processes replace, in accordance with strict rules, discontinued or much-out-of-date items with current merchandise, thereby reducing sample losses that would otherwise occur when outlets discontinue items or when items become outdated. This description review process will not focus on the individual details of the originally described visit. It will strive to capture, through the description review, changes in the hospital's approach or policy for treating the diagnosis.

Publication changes.[18] The item strata reclassification will be the most apparent aspect of the change to users because it will affect the index series that BLS publishes at the national level. Due to the collapsing of the differentiated hospital services strata into a single stratum, it will not be possible to continue a series for the 'hospital room' index, which has been part of the CPI since 1935. To ease the transition to the new structure, BLS will calculate and publish special substrata indexes for 'inpatient hospital services' and for 'outpatient hospital services.' The 'inpatient hospital services' substratum index will be composed of the old 'hospital room' and 'other inpatient services' data minus the weights for 'nursing home services.' The 'outpatient services' substratum index will correspond directly to the current 'outpatient services' index. Substrata indexes are not used directly in the calculation of the overall CPI because the item samples are not designed to support them. Their weights are allowed to shift, and in the case of hospitals, medical treatments may move between them. The new substratum series for 'inpatient services' will be on a December 1996 = 100.0 basis; the substratum series for 'outpatient services' will be continuous with the old outpatient stratum series, so that its initial, December 1996, value will equal the final, December 1996, value of the old series.

The 'hospital and related services' index is considered continuous, and will still be published with an index base of 1982–1984 = 100. Because 'hospital services' and 'nursing home services' are new index series and there are no comparable preceding index series, BLS will set the base period for these new indexes to December 1996=100.

Directions for future study

Measuring the price change for hospital services is particularly complex. On the industry side, a hospital service is actually a bundle of services producing a specific expected

outcome. The technology applied to produce this outcome, however, is constantly changing. The risks are high; the costs of inputs tend to be high. On the consumer side, the outcome of the service historically has been the primary guiding force behind consumer decisionmaking, with price playing a minor role in the demand process before the evolution of managed care. And increasingly, third-party payors are reimbursing hospitals for services provided to patients based on factors other than the inputs the hospitals apply to the patients.

In the CPI, medical care is fragmented into several commodities and services, many of which are components of actual hospital service bundles, such as physicians' services, prescription drugs, and personal medical equipment. Each major medical care category has its own expenditure class and strata in the item structure, its own index, and its unique data collection procedures. Although many of these items, in their own right, have individual markets, many of them share a market with other medical care products. The products and services within the 'medical care' component of the CPI do not exist in a vacuum, but are complements of one another. Changes in one medical care service area may influence price movement in another. This presents a general dilemma because the CPI item structure partitions these goods and services into separately functioning units.

One way to resolve this structural fragmentation problem relative to hospitals is to focus on the hospital bill, as the BLS Producer Price Index and now the CPI have done. (See the box on this page for a description of the current Producer Price Index procedures.) The bill organizes consumption from various hospital departments into a whole for the individual patient. There are alternate ways to regard this unit, that is, the bill: As a series of inputs, as a record of consumption, or as a proxy for an outcome. While constituting a more aggregate approach, making the bill the focal point of pricing fails to counter the effects of the continued fragmentation of price measurement for medical services provided outside the hospital setting.

Hospital services in the Producer Price Index (PPI)

In 1993, BLS first published the new Producer Price Index for hospitals. After a careful search of the literature and other medical care indexes, PPI staff opted to approach pricing hospital services through tracking insurance reimbursements to hospitals for selected diagnoses. They based their selection of diagnoses on a medicare study known as the Health Cost Utilization Project. This study provided data on the frequency of utilization of medicare diagnosis related groups (DRGs). Through probability sampling based on these national-level data, the analysts selected a series of diagnoses for pricing in PPI sample hospitals across the country. PPI field staff entered each hospital outlet with a list of assigned diagnoses in hand and requested the most recent bill for each one. If possible, they obtained copies of the detailed bills, which they then transferred to diskettes and offered to their hospital respondents to aid in the subsequent pricing process. (See Brian Catron and Bonnie Murphy, "Hospital price inflation: what does the new PPI tell us?" *Monthly Labor Review,* July 1996, pp. 24–31.)

While both the PPI and the CPI programs now select bills as the basis for item descriptions, there are many differences between their processes. First, the PPI samples from all areas of the country, urban and rural; the CPI prices in urban areas only, covering approximately 87 percent of the population. Second, the PPI program publishes national-level indexes for hospital type and selected diagnoses. The CPI also publishes its hospital services indexes at the national level, but the 'medical care services' CPI, including 'hospital services,' is published by metropolitan area, census region, and various region/city-size class indexes in addition to nationally.

Third, the PPI staff based their sample on medicare DRGs using a national data base. Although medicare and medicaid typically represent from one-third to two-thirds of hospital revenues, the CPI, which focuses mainly on out-of-pocket consumer expense, includes only the remaining proportion of the revenues—that generated by nonmedicare and nonmedicaid patients. Only privately insured or self-paying patient revenues are eligible for the universe of items in the CPI for hospital services. The PPI covers the entire industry including medicare and medicaid, not just the consumer out-of-pocket portion.

Fourth, as an index taking the consumer point of view, the CPI has adhered to its current practice of sampling items in each individual hospital in order to key into local spending patterns. The PPI staff used aggregated national medicare diagnosis data for their sampling process. Fifth, probability sampling for the revised hospital CPI was based on delivery setting and payor identification, rather than diagnosis. Finally, in their move toward a more patient-centered, global view of hospital services, the CPI analysts determined that a record of every item listed on the complete bill was not a requirement for pricing. Documentation of essential price factors would provide the necessary detail.

An alternative approach involves measuring price change for health insurance premiums. Use of health benefit packages as the item priced would eliminate the fragmentation inherent in the current item structure. Health care insurance benefit packages cover a wide range of medical services. Most policies include commodities and services from hospitals, laboratories, and physicians, as well as prescription drugs outside the hospital, thus bringing the variety of medical care service categories under a single umbrella. Yearly health plan adjustments to benefit packages and the consequent potential changes in policy quality, however, have been the hazards of this solution.[19]

The difficult questions remain for further study. These include the effects of changes in quality of inputs and outcomes, the impact of new technologies, and modifications in service delivery due to increased hospital efficiencies such as benefits from economies of scale. CPI staff will undertake such research in the future. Improvements to the data collection instrument will facilitate the research process by providing a variety of variables on both the global and specific views of hospital treatment. This reorientation of the CPI for hospital services is an important first step to a more accurate and representative CPI index for 'hospital and related services.' □

Footnotes

[1] See Walter Lane, "Changing the item structure of the Consumer Price Index," pages 18–25, this issue.

[2] *Relative importance of components in the CPI, 1995*, Bulletin 2476 (Bureau of Labor Statistics, February 1996), p. 6

[3] Lane, "Changing the item structure."

[4] Paul A. Armknecht and Daniel H. Ginsburg, "Measuring Price Changes in Consumer Services," in Zvi Griliches, ed., *Output Measurement in the Services Sector*, National Bureau of Economic Research Studies in Income and Wealth, no. 56 (University of Chicago Press, 1992), pp. 110–11.

[5] For more information on hospital item descriptions, see Elaine M . Cardenas, "The CPI for hospital services: concepts and procedures," *Monthly Labor Review,* July 1996, pp. 32–42.

[6] The 'nursing home services' stratum will include nursing home care, convalescent and rehabilitation care, and starting in 1998, also will include 'adult day care services.'

[7] The "price" for hospital service items in the CPI has been defined as the total of monies received from patients and their nongovernment insurers. For a discussion on this, see Cardenas, "The CPI for hospital services."

[8] In the item sampling process, "you have arrived at a unique item...when the respondent can identify no further price determining characteristics upon which to form groups" for the category. *CPI Commodities and Services Initiation Data Collection Manual* (Bureau of Labor Statistics, October 1993), ch. 6, "Disaggregation," p. 2.

[9] For a discussion of out-of-pocket expenses, reimbursements, and transaction prices, see Cardenas, "The CPI for hospital services."

[10] Not all of these characteristics are addressed on the new checklist.

[11] Disaggregation is the term given to sampling with probability-proportional-to-size, which is conducted on site, and usually is based on revenue as measure of size.

[12] The Producer Price Index (PPI), as part of its effort to expand measurement of price change in the services sector, adopted an industry series of hospital indexes effective for its January 1993 publication. The PPI hospital index is based on descriptions of services found on patient bills and the use of the reimbursement rate as the reported price. The new CPI for hospitals is similar to the PPI hospital index only in that descriptions and prices also will be based on patient bills and reimbursement terms. The CPI's focus and methodology for its hospital index are significantly different from that of the PPI. (For more on this, see the box comparing CPI and PPI hospital indexes.)

[13] Prices for items with modified descriptions are not automatically compared, nor are the items automatically considered to be comparable.

[14] These are various aggregate ways of looking at hospital visits, with reimbursements often based on a lump sum or flat fee for a time- or diagnosis-related service bundle.

[15] A move from the inpatient to outpatient setting for an item is possible under controlled circumstances.

[16] A capitated insurance plan is based on the number of members it is covering and a projected amount of medical care expense over a designated period. Hospitals are reimbursed in advance on a periodic basis. The hospital must provide all care to plan members with the periodic funds it receives.

[17] *CPI Commodities and Services Pricing Data Collection Manual* (Bureau of Labor Statistics, October 1993), ch. 4, "Item eligibility rules at pricing," pp 5–9.

[18] "Changing the Hospital and Related Services Component of the Consumer Price Index," *CPI Detailed Report,* June 1996, pp. 7–8.

[19] The most recent test of pricing health insurance policies took place in 1986. At that time, insurers could not provide BLS with sufficient information for quality adjustments necessary when policy coverage changed each year.